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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/749,921	12/29/2000	Robert J. O'Donnell	015290-465	6804
21839	7590	03/08/2006	EXAMINER	
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			ART UNIT	PAPER NUMBER
			1765	

DATE MAILED: 03/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/749,921

Applicant(s)

O'DONNELL ET AL.

Examiner

Binh X. Tran

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 December 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 8, 10-13, 15-18, 24-29 and 30-36 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 25 and 29 is/are allowed.
- 6) ☒ Claim(s) 8, 10-13, 15-18, 24, 26-28 and 30-36 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 8, 10, 13, 15-18, 24, 26, 30, 34, 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shamouilian et al. (US 5,606,485) in view of Clarke et al. (US 6,120,854).

Respect to claim 8, Shamouilian ('485) discloses a electrostatic chuck component (20) of semiconductor processing equipment, the component (20) comprising a substrate (28) having a surface and a polymer coating (22: 22a and/or 22b) on the surface of the substrate (28) and forming an outer surface of the

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component, the outer surface being resistant to plasma erosion and corrosion, wherein the component (20) is component an electrostatic chuck (See col. 4 lines 23-67, col. 5 lines 32-41; col. 7 lines 10-20, Fig 1-3). Shamouilian ('485) also teaches the component comprises a substrate (24) having a surface a polymer coating (22a) on the surface of the substrate (24) and forming an outer surface of the component, the outer surface being resistant to plasma erosion and corrosion (See Fig 3, 5, col. 5 lines 32-41)

Shamouilian ('485) fails to disclose that the polymer material is liquid crystal polymer. However, Shamouilian clearly teaches to use polymer coating to protect chuck from erosive environment (col. 4-5). Clarke discloses that liquid crystal polymer has superior property including extremely high flow, erosion resistance, significant melt strength than regular polymer (col. 2 lines 35-45). It would have been obvious to one having ordinary skill in the art, at the time of invention, to modify Shamouilian ('485) in view of Clarke by using liquid crystal polymer because it is capable of withstanding high temperature due to significant melt strength property as well as erosion resistance.

Respect to independent claim 13, Shamouilian fails to disclose the polymer is plasma sprayed liquid crystal polymer. However, Shamouilian ('485) clearly teaches to spray polymer material on the substrate (col. 7 lines 29-34). Clarke teaches to use plasma sprayed liquid crystal polymer because this technique is capable of forming a uniform surface (col. 4 lines 55-67). It would have been obvious to one having ordinary skill in the art, at the time of invention, to modify Shamouilian ('485) in view of Clarke by using plasma sprayed liquid crystal polymer because this technique is capable of forming a uniform surface.

Respect to claim 10, Clarke discloses the substrate (28) or substrate (24) comprises aluminum (col. 6 lines 1-2; col. 6 lines 50-52). Respect to claim 24, Shamouilian ('485) discloses the component (20) is an electrostatic chuck. Respect to claim 15, Shamouilian ('485) discloses the polymer (22a and/or 22b) comprises a preformed sheet cover the surface of the substrate (28) (Fig 1). The liquid crystalline polymer limitation in claim 15 has been discussed above under Clarke's reference.

Respect to claim 16, Shamouilian ('485) discloses the component comprise a roughen surface that has been subjected to a surface roughen treatment and is in contact with the polymer applied on the surface (col. 6 lines 50-64). Respect to claim 17, Shamouilian ('485) discloses the polymer material (22) includes a filler (col. 5 lines 33-41). The liquid crystalline polymer limitation in claim 17 has been discussed above under Clarke's reference.

Respect to claim 18, Shamouilian ('485) discloses a plasma chamber (40) comprise at least one component (20) or component (24). Respect to claims 26 and 30, Shamouilian ('485) discloses at least intermediate layer (22b or 24) between the surface of the substrate (28) and the coating (22a). Respect to claims 34 and 36, Shamouilian discloses the component consist essentially of a substrate a sprayed polymer. The limitation regarding sprayed liquid crystalline polymer was discussed above under Clarke reference.

4a. Claims 11, 27-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shamouilian ('485) in view of Clarke as applied to claim 8 above, and further in view of Shamouilian (US 2002/0036881).

4b. Claims 31-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shamouilian ('485) in view of Clarke as applied to claim 13 above, and further in view of Shamouilian (US 2002/0036881).

Respect to claims 11, 27-28, 31-32 Shamouilian ('485) fails to disclose that the substrate comprises alumina (claim 11), or refractory metal (claims 27, 31) or ceramic material selected from the group consisting of silicon carbide, silicon nitride, boron carbide, and boron nitride (claims 28, 32). However, Shamouilian ('485) clearly discloses the base of the chuck (i.e. the substrate) comprise aluminum (col. 6 lines 51-56). In a semiconductor apparatus, Shamouilian ('881) discloses the chuck have a base comprises either aluminum, or aluminum oxide (aka alumina), refractory metal (i.e. titanium, tungsten), or ceramic material selected from the group consisting of silicon carbide, silicon nitride, boron carbide, and boron nitride (page 3 paragraphs 0037). It would have been obvious to one having ordinary skill in the art, at the time of invention, to modify Shamouilian ('485) and Clarke in view of Shamouilian ('881) by using alumina, refractory metal or ceramic material selected from the group consisting of silicon carbide, silicon nitride, boron carbide, and boron nitride because equivalent and substitution of one for the other would produce an expected result.

5. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shamouilian (US 5,606,485) in view of Clarke as applied to claim 10 above, and further in view of Whitlock et al. (US 4,736,087).

Respect to claim 12, Shamouilian fails to disclose the component includes an anodized surface. However, Shamouilian clearly discloses the component is a chuck

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comprises aluminum. In a semiconductor apparatus, Whitlock teaches to use either aluminum or anodized aluminum for the chuck (col. 3 lines 68 to col. 4 line 3). It would have been obvious to one having ordinary skill in the art, at the time of invention, to modify Shamouilian ('485) and Clarke in view of Whitlock by using anodized aluminum because equivalent and substitution of one for the other would produce an expected result.

6. Claims 33 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shamouilian ('485) in view of Clarke and further in view of Kava et al. (US 5,474,649).

Respect to claims 33 and 35, Shamouilian ('485) fail to disclose the component (20) is selected from the group consisting of a plasma chamber wall, a gas distribution plate, a gas ring, a pedestal. Kava teaches to use a focus ring (40) have a polymeric coating material in a plasma chamber in order to stabilize the contaminant build up during the etching process (col. 5-6). It would have been obvious to one having ordinary skill in the art, at the time of invention, to modify Shamouilian ('485) and Clarke in view of Kava by using a focus ring because it will help to stabilize the contaminant build up during the etching process.

Allowable Subject Matter

7. Claims 25, 29 are allowed.

The following is a statement of reasons for the indication of allowable subject matter: The reason for indication allowable subject matter was discussed in previous office action.

Response to Arguments

8. The applicant's amendment filed on 12-27-2005 is sufficient to overcome the 35 USC §112 2nd paragraph rejection. Thus, the examiner withdraws the 35 USC §112 2nd rejections.

Applicant's arguments filed 12-27-2005 have been fully considered but they are not persuasive.

The applicant based on the Board Decision in Application 09/749,923, which "found that Fagan did not disclose the types of surface that could be rendered corrosion resistant". According to applicant "Clarke does not disclose rendering components of semiconductors processing equipment corrosion resistant". Therefore, applicants argue that Clarke is nonanalogous art. The examiner disagrees. The examiner recognizes that Clarke is silent regarding semiconductor processing equipment. However, Clarke clearly disclose that the liquid crystal polymer coating process is applied to a structure to prevent damage cause by oxidation, erosion, temperature extremes and chemicals (col. 1 lines 5-11). The primary reference Shamouilian ('485) teaches to apply a polymer coating to protect the component from corrosion/erosion. Therefore, the examiner still maintains that it is obvious to combine Shamouilian ('485) in view of Clarke in order to protect the component from corrosion/erosion and other temperature or chemical extreme condition. The applicants further states that "the only examples given for the types of surfaces to be rendered corrosion resistance by non-analogous Clarke are those of a ship or a military or commercial aircraft" According to applicant, "Clarke does not provide any suggestion to apply liquid crystalline polymers to

components of semiconductor processing equipment". The examiner disagrees with this argument. Teaching one way does not mean teaching away. Clarke's invention is about a process of coating a liquid crystalline polymer (LCP) on a substrate to protect it from erosion, oxidation, temperature extreme and chemicals. Clarke does not exclude a process of coating a LCP on a semiconductor equipment.

The applicant further argues that "Clarke does not disclose liquid crystalline polymer as a plasma resistant". The examiner disagrees. Plasma resistant is a property of the liquid crystalline polymer. Clarke's liquid crystalline polymer is identical with applicant's compound. According to the MPEP 2112.01, "Products of identical chemical composition can not have mutually exclusive properties." A chemical composition and its properties are inseparable. Therefore, if the prior art teaches the identical chemical structure, the properties applicant discloses and/or claims are necessarily present.

In page 10 of the remark, the applicants state that "Clarke is defective from the same three reasons that Fagan was defective in the reversal of the prior art rejection in Application 09/749,923". The examiner disagrees. First, Shamouilian ('485) discloses to apply polymer coating to protect the substrate from corrosion/erosion in a semiconductor equipment. Clarke also teaches to apply liquid crystalline polymer to protect the substrate from corrosion/erosion. Second, Shamouilian clearly teaches to use polymer material on the surface of the semiconductor equipment. Liquid crystalline polymer is a type or a species of a polymer. Third, the examiner shows that the liquid

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crystalline polymer in Clarke reference is plasma resistance since it is a property of material as discussed above.

In page 13 of the remark, Applicants argues that in column 5 lines 51-55 Shamouilian '485 refer to application 08/052,018 for the teaching a "preferred protective coating". According to applicants a continuation of '018 application issued to US 5,560,780 to Wu teaches to use inorganic aluminum compound as a protective coating. This argument is not persuasive. Shamouilian '485 clearly teaches the protective coating (22) can be either inorganic compound or polymeric compound (col. 4 lines 63 to col. 5 line 22). For a 35 USC 103 rejections, the examiner only need to show at least one embodiment in the prior read on the claimed invention. The examiner does not need to show all of the embodiments in the prior read on the claimed invention. Thus, the examiner still consider Shamouilian '485 as a proper prior art and that Shamouilian clearly teaches to use polymeric compound as a protective coating.

In response to applicant's argument that Clarke is nonanalogous art (page 14 of the remark), it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, Clarke clearly teaches to use a liquid crystalline polymer coating on a substrate to protect the substrate from corrosion (col. 4 lines 55-67). Clarke further discloses the superior property of liquid crystalline polymer such as withstanding high temperature. The primary reference Shamouilian teaches to coat the

substrate with a polymer material (22) to protect the substrate from corrosion. Since, Shamouilian ('485) clearly teaches to use polymeric material, it is obvious to use a specific type of polymer material (liquid crystalline polymer) if the prior art clearly discloses the superior property of this polymer.

The applicant further argues that "Clarke does not disclose any electrical properties of the liquid crystalline polymer material, much less disclose that it would have the needed electrical properties disclosed by Wu". This argument does not commensurate with the scope of the claims. There is no limitation in the claim, which recites the electrical property of the liquid crystalline polymer. Further, the examiner does not use Wu as a prior art for the ground of rejection as argued by applicant.

Respect to claim 13, the applicant argues that the component recited is patentable over the applied reference. The applicant emphasizes on the limitation "a plasma sprayed liquid crystalline polymer coating on the surface of the substrate and forming an outer surface of the component, the outer surface being resistant to plasma erosion and corrosion in the semiconductor processing equipment". As discussed above, Clarke teaches to form a liquid crystalline polymer on the substrate to form an outer coating in order to protect the substrate from corrosion/erosion. Shamouilian ('485) teaches to form a polymer coating material on the semiconductor processing equipment to protect the component from corrosion/erosion. Plasma resistant is a property of the liquid crystalline polymer. If the prior art teaches the identical chemical compound (i.e. liquid crystalline polymer), the properties applicant discloses and/or claims are necessarily present.

A new ground of rejection was set forth to discuss applicant's amended claims 33, 35.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Binh X. Tran whose telephone number is (571) 272-1469. The examiner can normally be reached on Monday-Thursday and every other Friday.

10. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on (571) 272-1465. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Binh X. Tran

NADINE G. NORTON
SUPERVISORY PATENT EXAMINER
